FORM PTO 449

FORM PTO 449

SERIAL NO.

08/924,407

SO50/230

FILING DATE

APPLICANT'S INFORMATION DISCLOSURE
STATEMENT

(use several sheets if necessary)

APPLICANT(S): Hossack et al.

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

EXAMINER INITIAL,		DOCUMENT NUMBER	DATE	NAME	CLASS/ SUBCLASS	FILING DATE
14	A1	3,640,271	2/8/72	Horton		7
77	A2	4,100,916	7/18/78	King		7
	A3	4,712,037	12/8/87	Verbeek et al.		/
	A4	4,849,692	7/18/89	Blood		/
í	A5	4,945,305	7/31/90	Blood		7
	A6	5,040,537	8/20/91	Katakura		
	A7	5,111,823	5/12/92	Cohen		
	A8	5,115,809	5/26/92	Saitoh et al.		
,	A9	5,127,409	7/7/92	Daigle		
	A10	5,135,000	8/4/92	Akselrod et al.		7
	A11	5,159,931	11/3/92	Pini		
	A12	5,190,766	3/2/93	Ishihara	1	
	A13	5,195,520	3/23/93	Schlief et al.	\	/
	A14	5,197,477	3/30/93	Peterson et al.		\/
	A15	5,215,680	6/1/93	D'Arrigo		X
	A16	5,219,401	6/15/93	Cathignol et al.		/\
	A17	5,233,994	8/10/93	Shmulewitz		1
	A18	5,255,683	10/26/93	Monaghan	 /	\
	A19	5,287,753	2/22/94	Routh et al.	7	
	A20	5,305,756	4/26/94	Entrekin et al.		
	A21	5,313,948	5/24/94	Murashita et al.	7	
	A22	5,329,496	7/12/94	Smith	7	
	A23	5,353,354	10/4/94	Keller et al.		1
	A24	5,358,466	10/25/94	Aida et al.		
	A25	5,380,411	1/10/95	Schlief		
	A26	5,386,830	2/7/95	Powers et al.		
	A27	5,396,285	3/7/95	Hedberg et al.		
	A28	5,398,691	3/21/95	Martin et al.		
	A29	5,409,688	4/25/95	Quay		
	A30	5,410,205	4/25/95	Gururaja		
	A31	5,410,516	4/25/95	Uhlendorf et al.	7	
	A32	5,417,213	5/23/95	Prince	7	
	A33	5,417,214	5/23/95	Roberts et al.		
V	A34	5,425,366	6/20/95	Reinhardt et al.	/	

EXAMINER	DATE CONSIDERED
the	9-17-98

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Rev. Oct. 97

C:\Summerfield\5050\1449\230 1449.doc

SERIAL NO. CASE NO. 08/924,407 5050/230 PATENTS AND PUBLICATIONS FOR FILING DATE **GROUP ART UNIT** CANT'S INFORMATION DISCLOSURE August 22, 1997 3305 **STATEMENT** use several sheets if necessary) APPLICANT(S): Hossack et al.

REFERENCE DESIGNATION **U.S. PATENT DOCUMENTS**

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS/ SUBCLASS	FILING DATE
(M.	A35	5,433,204	7/18/95	Olson	1	
m	A36	5,433,207	7/18/95	Pretlow, III	1	
	A37	5,435,310	7/25/95	Sheehan et al.		/
	A38	5,438,554	8/1/95	Seyed-Bolorforosh et al.		1
1	A39	5,443,071	8/22/95	Banjanin et al.		/
	A40	5,454,371	10/3/95	Fenster et al.		/
	A41	5,456,255	10/10/95	Abe et al.		/
,	A42	5,456,257	10/10/95	Johnson et al.		/
/	A43	5,469,849	11/28/95	Sasaki et al.		/
	A44	5,471,990	12/5/95	Thirsk		
	A45	5,474,073	12/12/95	Schwartz et al.		. /
	A46	5,479,926	1/2/96	Ustuner et al.		/
	A47	5,482,046	7/9/96	Deitrich		/
	A48	5,523,058	6/4/96	Umemura et al.		/
	A49	5,526,816	6/18/96	Arditi		/
	A50	5,540,909	6/30/96	Schutt	\	1
	A51	5,546,807	8/20/96	Oxaal et al.	1 -	1
	A52	5,558,092	9/24/96	Unger et al.		/
ĺ	A53	5,560,364	10/1/96	Porter	\ /	
	A54	5,562,095	10/8/96	Downey et al.	1/	
	A55	5,562,096	10/8/96	Hossack et al.	V	
j	A56	5,577,505	11/26/96	Brock-Fisher et al.	X	
	A57	5,579,768	12/3/96	Klesenski	/\	
	A58	5,579,770	12/3/96	Finger	/ \	-
	A59	5,580,575	12/3/96	Unger et al.	/ /	
	A60	5,588,435	12/31/96	Weng et al.	/	1
	A61	5,601,085	2/11/97	Ostensen et al.	/	1
	A62	5,601,086	2/11/97	Pretlów, III et al.	/	1
	A63	5,608,690	3/4/97	Hossack et al.	1	
	A64	5,617,862	4/8/97	Cole et al.	1	
	A65	5,623,928	4/29/97	Wright et al.	/	<u> </u>
	A66	5,628,322	5/13/97	Mine	/	
1	A67	5,632,277	5/27/97	Chapman et al.	/	1
	A68	5,655,535	8/12/97	Friemel et al.		1
	A69	5,675,554	10/7/97	Cole et al.	/	<u> </u>
1,	A70	5,678,554	10/21/97	Hossack et al.	<i> </i>	
₩	A71	5,685,308	11/11/97	Wright et al.	/	
XAMINER	A	1		CONSIDERED		

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

SERIAL NO. CASE NO. 08/924,407 5050/230 **OF PATENTS AND PUBLICATIONS FOR** FILING DATE **GROUP ART UNIT** PROCANT'S INFORMATION DISCLOSURE August 22, 1997 3305 STATEMENT (use several sheets if necessary) APPLICANT(S): Hossack et al.

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

I	EXAMINER	-	DOCUMENT			CLASS/	FILING
ı	INITIAL		NUMBER	DATE	NAME	SUBCLASS	DATE
	M	A72	5,696,737	12/9/97	Hossack et al.		

FOREIGN PATENT DOCUMENTS

·	EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS/ SUBCLASS	TRANS YES	LATION NO
Ī	MI	Α	EP 0 357 164	unknown	EPO (UK)			
ĺ	V	A73	EP 0 770 352 A1	2 May 1997	EPO			

EXAMINER		
INITIAL		OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)
11	A74	Deborah J. Rubens, M.D., "Sonoelasticity Imaging of Prostate Cancer: In Vitro Results."
101	•	Radiology, Vol. 195, No. 2, 1995.
	A75	T.G. Leighton, "Transient excitation of insonated bubbles." Research Notes.
	A76	Erick J. Chen, et al., "Young's Modulus Measurements of Soft Tissues with Application to
		Elasticity Imaging." IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Vol. 43, No. 1, Jan. 1996.
	A77	Pi Hsien Chang, et al., "Second Harmonic Imaging and Harmonic Doppler Measurements with Albunex." IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Vol. 42, No. 6, Nov. 1996.
	A78	Marc Gensane, "Bubble population measurements with a parametric array." 1994 Acoustical Society of America, 95 (6) June.
	A79	Ken Ishihara et al., "New Approach to Noninvasive Manametry Based on Pressure Dependent Resonant Shift of Elastic Microcapsules in Ultrasonic Frequency Characteristics." Japanese J. of Aplied Physics, Vol. 2 (1988).
	A80	Shmuel Gottlieb, M.D. et al., Effect of Pressure on Echocardiographic Videodensity from Sonicated Albumin: An In Vitro Model." J. Ultrasound Med. 14 (1995).
	A81	J.W. Norris, "The non-linear oscillation of a radially symmetric bubble in a time periodic pressure field." Dynamics and Stability of Systems, Vol. 9, No. 1 (1994).
	A82	Michael S. Longuet-Higgins, Resonance in nonlinear buble oscillations." J. Fluid Mech. (1991) Vol. 224.
	A83	Chiang C. Mei, et al., "Parametric resonance of a spherical bubble." J. Fluid Mech. (1991) Vol. 229.
V	A84	V.L. Newhouse, et al., "Bubble size measurements using the nonlinear mixing of two frequencies." J. Acoust. Soc. Am. 75 (5), May 1984.

EXAMINER /	DATE CONSIDERED	
Mh	9-17-98	

EXAMINER. Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Rev. Feb.-97

	Page 4 of 5
SERIAL NO.	CASE NO.
08/924,407	5050/230
FILING DATE	GROUP ART UNIT
August 22, 1997	3305
APPLICANT(S): Hossack et al.	
	08/924,407 FILING DATE August 22, 1997

EXAMINER INITIAL		OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)
14	A85	Janet B. Jones-Oliveira, et al., "Transient fluid - solid interaction of submerged spherical shells revisited: Proliferation of frequencies and acoustic radiation effects." Acoustical Society of America, 96(2) Pt. 1, August 1994.
	A86	Chandra M. Sehgal, PhD., et al., "Sonographic Engancement of Renal Cortex by Contrast Media." J. Ultrasound Med., 14 (1995).
	A87	William Armstrong et al., "Position Paper on Contrast Echocardiography", Am. Soc. of Echocardiography, 6/6/94.
	A88	Fred Lee, Jr., M.D., "Sonoelasticity Imaging: Results in in Vitro TIssue Specimens." Radiology, Vol. 181, No. 1 Oct. 1991.
	A89	Kevin J. Parker, PhD, et al., "Sonoelasticity of Organs: Shear Waves Ring a Bell." J. Ultrasound Med. 11 (1992).
	A90	Nico de Jong, "Physical properties and technical aspects of ultrasound contrast agents." (one page)
	A9.1	Robert M. Lerner, et al., "'Sonoelasticity' Images Derived from Ultrasound Signals in Mechanically Vibrated Tissues." Ultrasound in Med. and Biol., Vol. 16, No. 3, 1990.
	A92	J. Ophir, et al., "Elastography: A Quantitative Method for Imaging the Elasticity of Biological Tissues." Ultrasonic Imaging 13, (1991).
	A93	J.A. Hossack, et al., "Improving transducer performance using multiple active layers." SPIE Vol. 1733 (1992).
	A94	Volkmar Uhlendorf, et al., "Nonlinear Acoustical Response of Coated Microbubbles in Diagnostic Ultrasound." IEEE 1994 Ultrasonics Symposium.
	A95	John A. Hossack, et al., "Improving the Characteristics of a Transducer Using Multiple Piezoelectric Layers." IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Vol. 40, No. 2, March 1993.
	A96	"HP Ultrasound Technologies – Viability." About HP Ultrasound Imaging, WWW document 1997.
	A97	Ted Christopher, "Finite Amplitude Distortion-Based Inhomogeneous Pulse Echo Ultrasonic Imaging." IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Vol. 44, No. 1, January 1997.
	A98	"Supplement to Journal of the American College of Cardiology." American College of Cardiology, 45th Annual Scientific Session, March 24-27, 1996 pgs. 21A, 63A, 239-240A.
	A99	Yang-Sub Lee, et al., "Time-domain modeling of pulsed finite-amplitude sound beams." J. Acoustical Society of America, 97 (2), February 1995.
	A 100	Michalakis A. Averkiou, et al. "Self-demodulation of amplitude and frequency. Modulated pulses in a thermouisceus fluid", J. Acoustical Society of America, Vol. 94, No. 5, November 1993.
Ą	A 101	Kotaro Sato, et al., "Numerical analysis of a gas bubble near a rigid boundary in an oscillatory pressure field." J. Acoustical Society of America, 93 (4), April 1993.

FXAMINER		DATE CONSIDERED
		B/TE GOTTO:BETTED
	IN Im	1 9-17-48
	/ / /	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

		Page 5 of 5
FEBRIN P49-1449	SERIAL NO.	CASE NO.
Į į	08/924,407	5050/230
LIST PF PATENTS AND PUBLICATIONS FOR	FILING DATE	GROUP ART UNIT
LIST OF PATENTS AND PUBLICATIONS FOR TRADEPLICANT'S INFORMATION DISCLOSURE	August 22, 1997	3305
STATEMENT		
(use several sheets if necessary)	APPLICANT(S): Hossack et al.	

EXAMINER		
INITIAL		OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)
	Α	L.W. Anson et al., "Ultrasonic scattering from spherical shells including viscous and thermal
	102	effects." J. Acoustical Society of America, 93 (4), April 1993.
	Α	K.J. Parker, et al., "Tissue Response to Mechanical Vibrations for 'Sonoelasticity Imaging'."
	103	Ultrasound in Med. & Biol., Vol. 16, No. 3, (1990).
	Α	B. Schrope, et al., "Simulated Capillary Blood Flow Measurement Using A Nonlinear Ultrasonic
	104	Contrast Agent," Ultrasonic Imaging 14 (1992).
	Α	H. Edward Karrer, et al., "A Phased Array Acoustic Imaging System for Medical Use." 1980
	105	Ultrasonics Symposium.
	Α	"Small Spheres Lead to Big Ideas." Research News, Science Vol. 267, 20 Jan. 1995.
	106	
	Α	excerpt from Ultrasonics: Fundamentals and Applications (1992), pgs. 380-393, 363-65.
	107	
	Α	Abstracts Journal of the American Society of Echocardiography, Abstract Sessions IV and
	108	Poster Session A, Vol. 8, No. 3 pgs. 345-46, 355, 358-364.
	Α÷	Chandra M. Seghal, PhD, et al., "Influence of Postprocessing Curves on Contrast -
	109	Echographic Imaging: Preliminary Studies." J. Ultrasound Med., 14 (1995).
	Α	Dan Sapoznikov, et al., "Left Ventricular Shape, Wall Thickness And Function Based On Three-
	110	Dimensional Reconstruction Echocardiography." Dept. of Cardiology, Hadasah University
		HOspital, Jerusalem, Israel.
	Α	C.B. Burckhardt, et al., "Ultrasound Axicon: a device for focusing over a large depth." The
	111	Journal of the Acoustical Society of America, Vol. 54, No. 6, (1973).
	Α.	Olaf T. von Ramm, et al., "Real Time Volumetric Ultrasound Imaging System." Journal of
	112	Digital Imaging, Vol. 3, No. 4 (November), 1990 pp. 261-66.
	A	Shinichi Tamura et al., "Three-Dimensional Reconstruction of Echocardiograms Based on
	113	Orthogonal Sections." Pattern Recognition Vol. 18, No. 2 pp. 115, 124 (1985).
	Α	Hugh A. McCann, et al., "Multidimensional Ultrasonic Imaging For Cardiology." Proceedings of
	114	the IEEE, Vol. 76, No. 9, September (1988).
/	Α	William E. Lorensen, et al., "Marching Cubes: A High Resolution 3D Surface Construction
γ	115	Algorithm." Computer Graphics, Vol. 21, November 4, July (1987).

EXAMINER / /	DATE CONSIDERED
Ch han	9-17-08
	1 1 7 7 8

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

	27		
FORM PTO-1449	پير 1998 2 JUL 2 2	SERIAL NO.	CASE NO.
	\ <i>\</i>	08/924,407	5050/230
LIST OF PATEN	NEAND PUBLICATIONS FOR	FILING DATE	GROUP ART UNIT
APPLICANT'S II	NF CRIMATION DISCLOSURE	August 22, 1997	3305
	STATEMENT		
(use several sheets if n	ecessary)	APPLICANT(S): John A. Hossac	k, et al

REFERENCE DESIGNATION	U.S. PATENT DOCUMENTS
REFERENCE DESIGNATION	U.S. PATENT DUCUMENTS

REFERENCE DESIGNATION		U.S. PATENT DOCUMENTS				
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS/ SUBCLASS	FILING DATE
	A1					
	A2					
	A3					
	A4					
	A5					
	A6					
	A7					
	A8					
	A9					
	A10					
	A11					
	A12					
	A13					

FOREIGN PATENT DOCUMENTS

EXAMINER		DOCUMENT	DATE	COUNTRY	CLASS/	TRANSI	
INITIAL		NUMBER	DATE	COUNTRY	SUBCLASS	YES	NO
1/4	A14	EP 0 846 442 A2	10.06.1998				
1	A15						
	A16						
,	A17						
	A18						

EXAMINER INITIAL		OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)
	A19	
	A20	
	A21	
	A22	
	A23	
	A24	

EXAMINER ///	DATE CONSIDERED
1 June	9-17-98

EXAMINER. Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.